FLWEMS Paramedics Adult Protocol for the Management of:

CARDIAC DYSRTHYMIAS

(ACLS)

Indications

To outline the paramedic care and management of the adult patient with cardiac dysrhythmias.

Procedure

Follow current American Heart Association © (AHA) Advanced Cardiac Life Support (ACLS) guidelines.

Special Considerations

Pediatric ALS (PALS) protocols/algorithms are NOT outlined in this section.

Comprehensive ECC Algorithm

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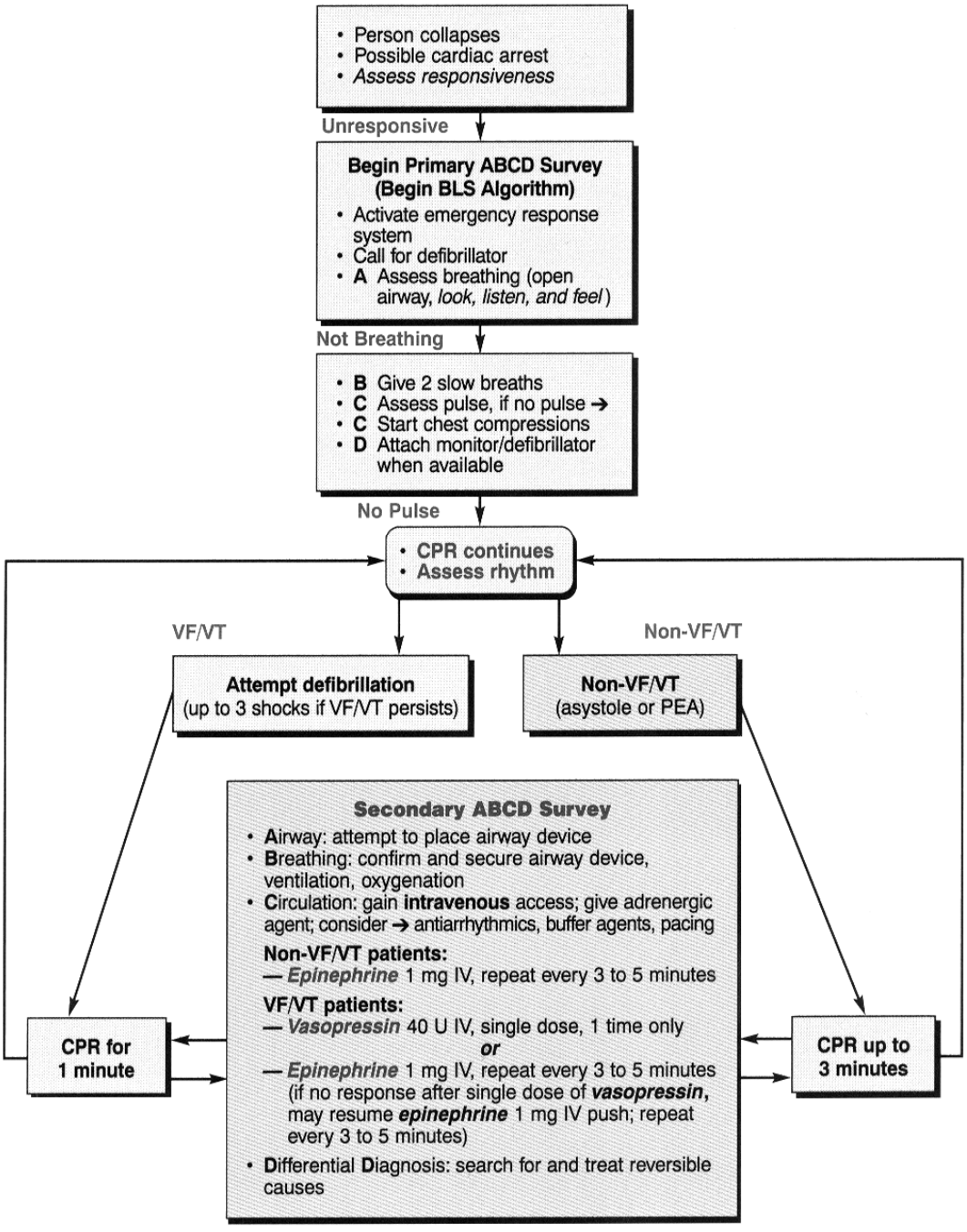

The Tachycardias: Overview Algorithm

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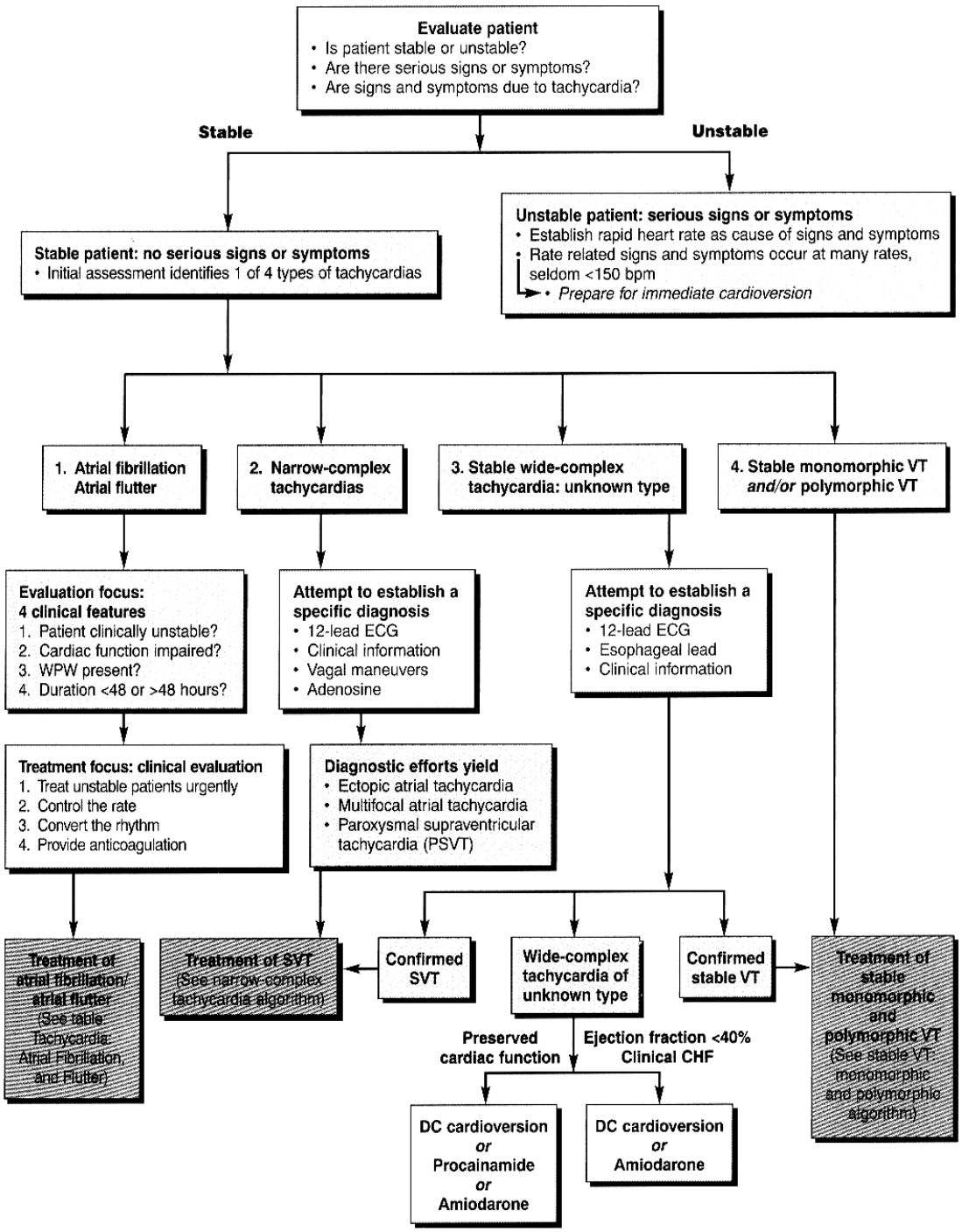

Ventricular Fibrillation/ Pulseless Ventricular Tachycardia (VF/VT) Algorithm

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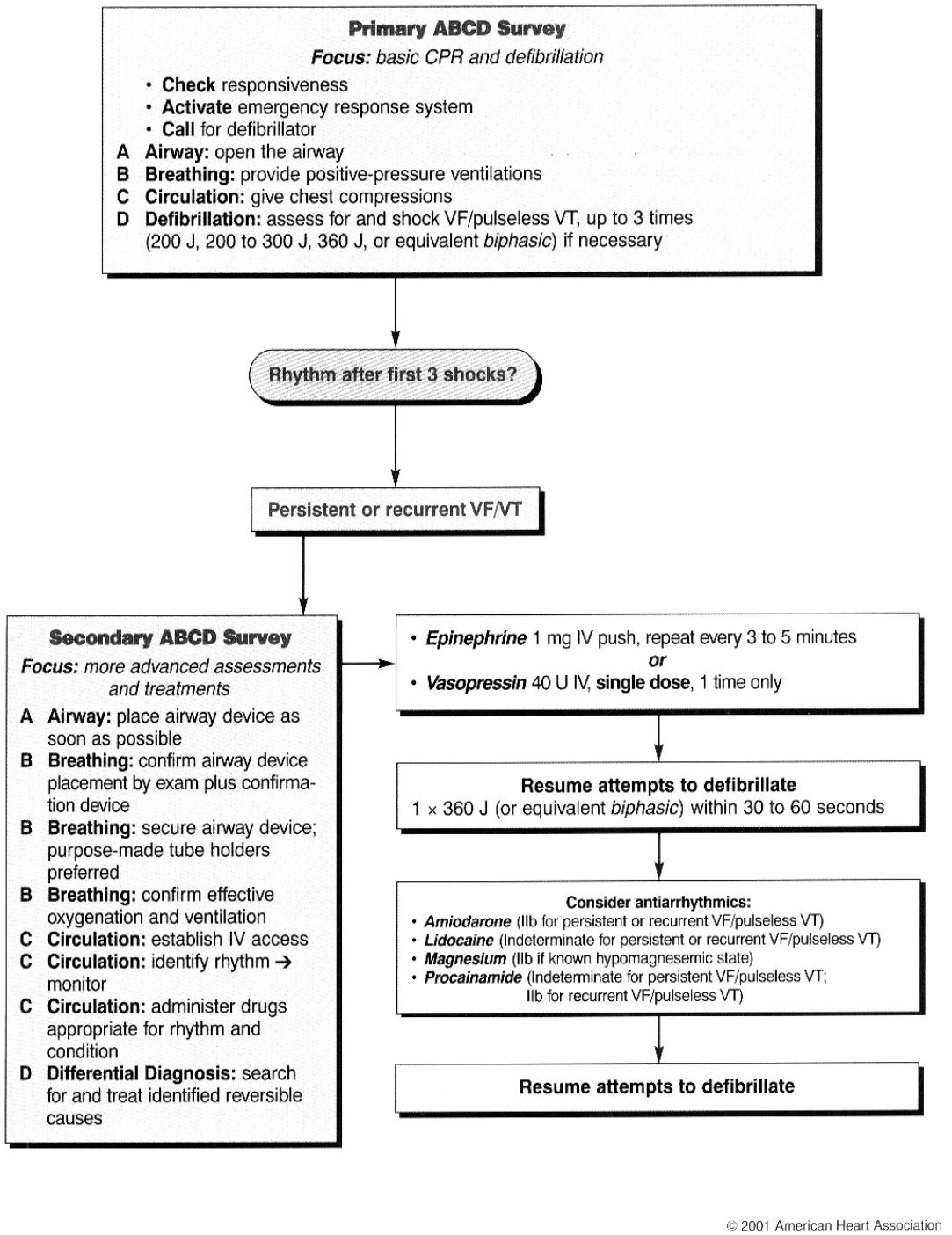

Stable Ventricular Tachycardia Monomorphic and Polymorphic

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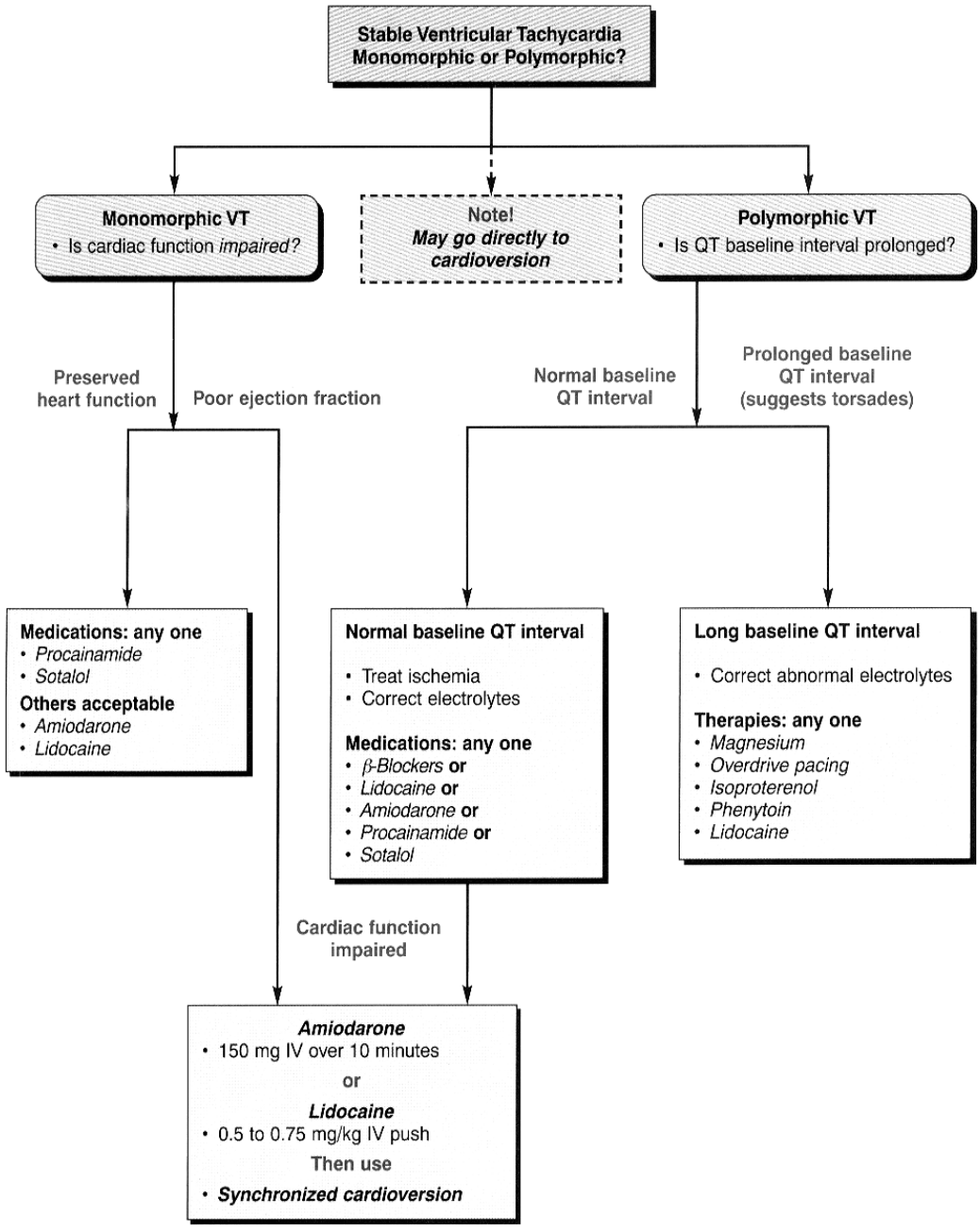

Narrow-Complex Tachycardia

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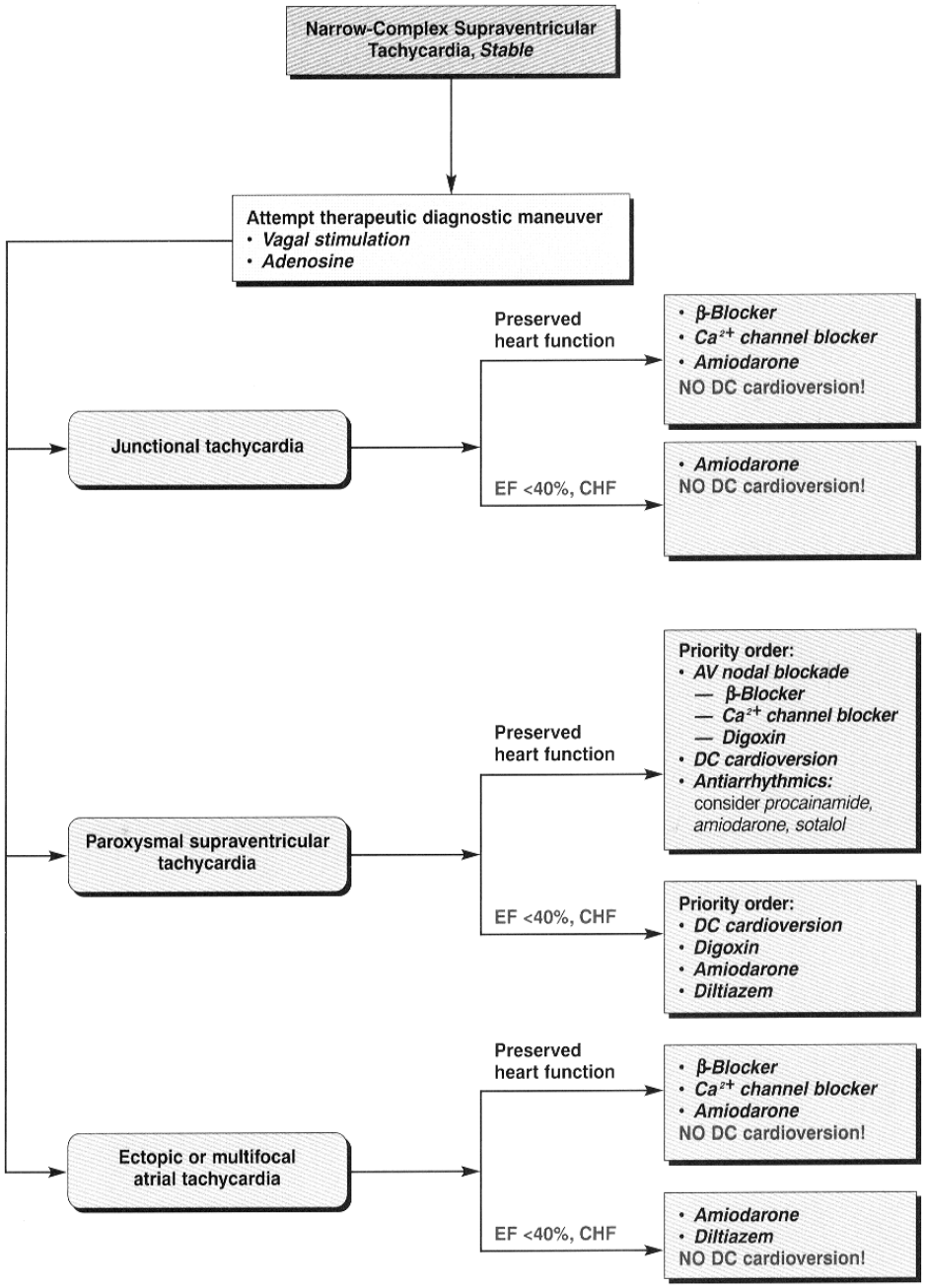

Tachycardia: Atrial Fibrillation and Flutter

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Control of Rate and Rhythm (continued from Tachycardia Overview)

Atrial fibrillation/ atrial flutter with • *Normal heart* • *Impaired heart* • *WPW*	1. Control Rate		2. Convert Rhythm	
	Heart Function Preserved	Impaired Heart EF <40% or CHF	Duration <48 Hours	Duration >48 Hours or Unknown
Normal cardiac function	**Note 1:** *If AF >48 hours' duration, use agents with potential to convert rhythm with extreme caution in patients not receiving adequate anticoagulation because of possible embolic complications.* *Use only 1 of the following agents (see **Note 2** below):* • Calcium channel blockers (Class I) • β-Blockers (Class I) • For additional drugs that are Class IIb recommendations, see Guidelines or ACLS text	*(Does not apply)*	**Consider** • DC cardioversion *Use only 1 of the following agents (see **Note 2** below):* • Amiodarone (Class IIa) • Ibutilide (Class IIa) • Flecainide (Class IIa) • Propafenone (Class IIa) • Procainamide (Class IIa) • For additional drugs that are Class IIb recommendations, see Guidelines or ACLS text	• Avoid nonemergent cardioversion unless anticoagulation or clot precautions are taken (see ***Note 3*** below) • **Note 3:** *Conversion of AF to NSR with drugs or shock may cause embolization of atrial thrombi unless patient has adequate anticoagulation.* • Use antiarrhythmic agents with extreme caution if AF >48 hours' duration *(see **Note 3** above).* ***or*** ***Delayed cardioversion*** **Anticoagulation × 3 weeks at proper levels** • Cardioversion, *then* • Anticoagulation × 4 weeks more ***or*** ***Early cardioversion*** • Begin IV heparin at once • TEE to exclude atrial clot ***then*** • Cardioversion within 24 hours ***then*** • Anticoagulation × 4 more weeks
Impaired heart (EF <40% or CHF)	*(Does not apply)*	**Note 1:** *If AF >48 hours' duration, use agents with potential to convert rhythm with extreme caution in patients not receiving adequate anticoagulation because of possible embolic complications.* *Use only 1 of the following agents (see **Note 2** below):* • Digoxin (Class IIb) • Diltiazem (Class IIb) • Amiodarone (Class IIb)	**Consider** • DC cardioversion ***or*** • Amiodarone (Class IIb)	• Avoid nonemergent cardioversion unless anticoagulation or clot precautions are taken (see ***Note 3*** above) • **Anticoagulation** as described above, followed by • **DC cardioversion**
WPW	**Note 1:** *If AF >48 hours' duration, use agents with potential to convert rhythm with extreme caution in patients not receiving adequate anticoagulation because of possible embolic complications.* • DC cardioversion ***or*** • **Primary antiarrhythmic agents** *Use only 1 of the following agents (see **Note 2** below):* • Amiodarone (Class IIb) • Flecainide (Class IIb) • Procainamide (Class IIb) • Propafenone (Class IIb) • Sotalol (Class IIb) ***Class III (can be harmful)*** • Adenosine • β-Blockers • Calcium blockers • Digoxin	**Note 1:** *If AF >48 hours' duration, use agents with potential to convert rhythm with extreme caution in patients not receiving adequate anticoagulation because of possible embolic complications.* • DC cardioversion ***or*** • Amiodarone (Class IIb)	• DC cardioversion ***or*** • **Primary antiarrhythmic agents** *Use only 1 of the following agents (see **Note 2** below):* • Amiodarone (Class IIb) • Flecainide (Class IIb) • Procainamide (Class IIb) • Propafenone (Class IIb) • Sotalol (Class IIb) ***Class III (can be harmful)*** • Adenosine • β-Blockers • Calcium blockers • Digoxin ***Impaired heart (EF <40% or CHF)*** • DC cardioversion • Amiodarone (Class IIb)	• Avoid nonemergent cardioversion unless anticoagulation or clot precautions are taken (see ***Note 3*** above) • **Anticoagulation** as described above, followed by • **DC cardioversion**

WPW indicates Wolff-Parkinson-White syndrome; AF, atrial fibrillation; NSR, normal sinus rhythm; TEE, transesophageal echocardiogram; and EF, ejection fraction.

Note 2: Occasionally 2 of the named antiarrhythmic agents may be used, but use of these agents in combination may have proarrhythmic potential. The classes listed represent the Class of Recommendation rather than the Vaughn-Williams classification of antiarrhythmics.

Electrical Cardioversion Algorithm

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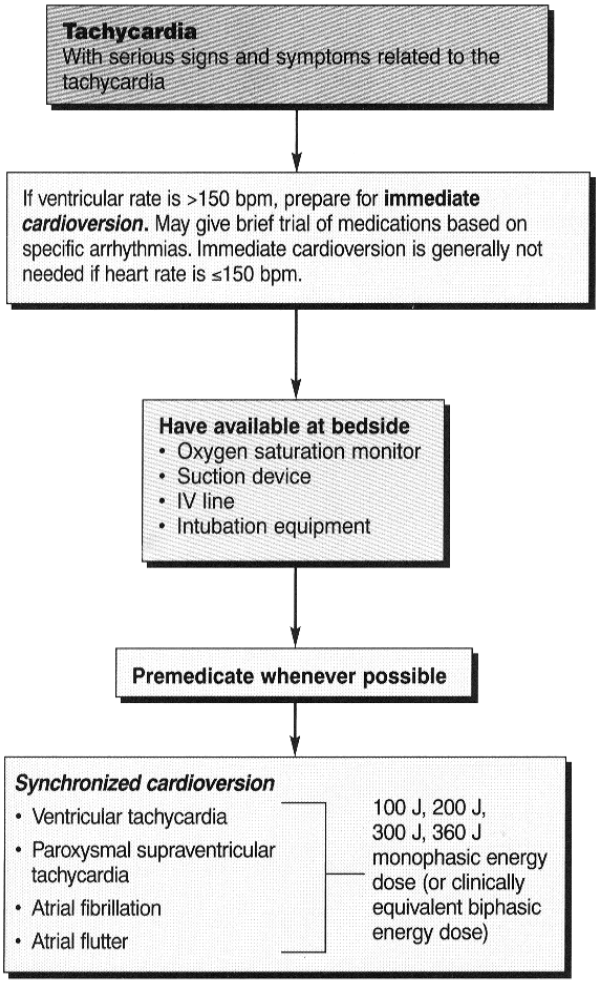

Notes:

1. Effective regimens have included a sedative (eg, ***diazepam, midazolam, barbiturates, etomidate, ketamine, methohexital***) with or without an analgesic agent (eg, ***fentanyl, morphine, meperidine***). Many experts recommend anesthesia if service is readily available.
2. Both monophasic and biphasic waveforms are acceptable if documented as clinically equivalent to reports of monophasic shock success.
3. Note possible need to resynchronize after each cardioversion.
4. If delays in synchronization occur and clinical condition is critical, go immediately to unsynchronized shocks.
5. Treat polymorphic ventricular tachycardia (irregular form and rate) like ventricular fibrillation: see ventricular fibrillation/pulseless ventricular tachycardia algorithm.
6. Paroxysmal supraventricular tachycardia and atrial flutter often respond to lower energy levels (start with 50 J).

Steps for Synchronized Cardioversion

1. Consider sedation.
2. Turn on defibrillator (monophasic or biphasic).
3. Attach monitor leads to the patient ("white to right, red to ribs, what's left over to the left shoulder") and ensure proper display of the patient's rhythm.
4. Engage the synchronization mode by pressing the "sync" control button.
5. Look for markers on R waves indicating sync mode.
6. If necessary, adjust monitor gain until sync markers occur with each R wave.
7. Select appropriate energy level.
8. Position conductor pads on patient (or apply gel to paddles).
9. Position paddle on patient (sternum-apex).
10. Announce to team members: *"Charging defibrillator—stand clear!"*
11. Press "charge" button on apex paddle (right hand).
12. When the defibrillator is charged, begin the final clearing chant. State firmly in a forceful voice the following chant before each shock:
    - *"I am going to shock on three. One, I'm clear."* (Check to make sure you are clear of contact with the patient, the stretcher, and the equipment.)
    - *"Two, you are clear."* (Make a visual check to ensure that no one continues to touch the patient or stretcher. In particular, do not forget about the person providing ventilations. That person's hands should not be touching the ventilatory adjuncts, including the tracheal tube!)
    - *"Three, everybody's clear."* (Check yourself one more time before pressing the "shock" buttons.)
13. Apply 25 lb pressure on both paddles.
14. Press the "discharge" buttons simultaneously.
15. Check the monitor. If tachycardia persists, increase the joules according to the electrical cardioversion algorithm.
16. **Reset the sync mode after each synchronized cardioversion because most defibrillators default back to unsynchronized mode.** This default allows an immediate shock if the cardioversion produces VF.

Bradycardia Algorithm
(Patient Not in Cardiac Arrest)

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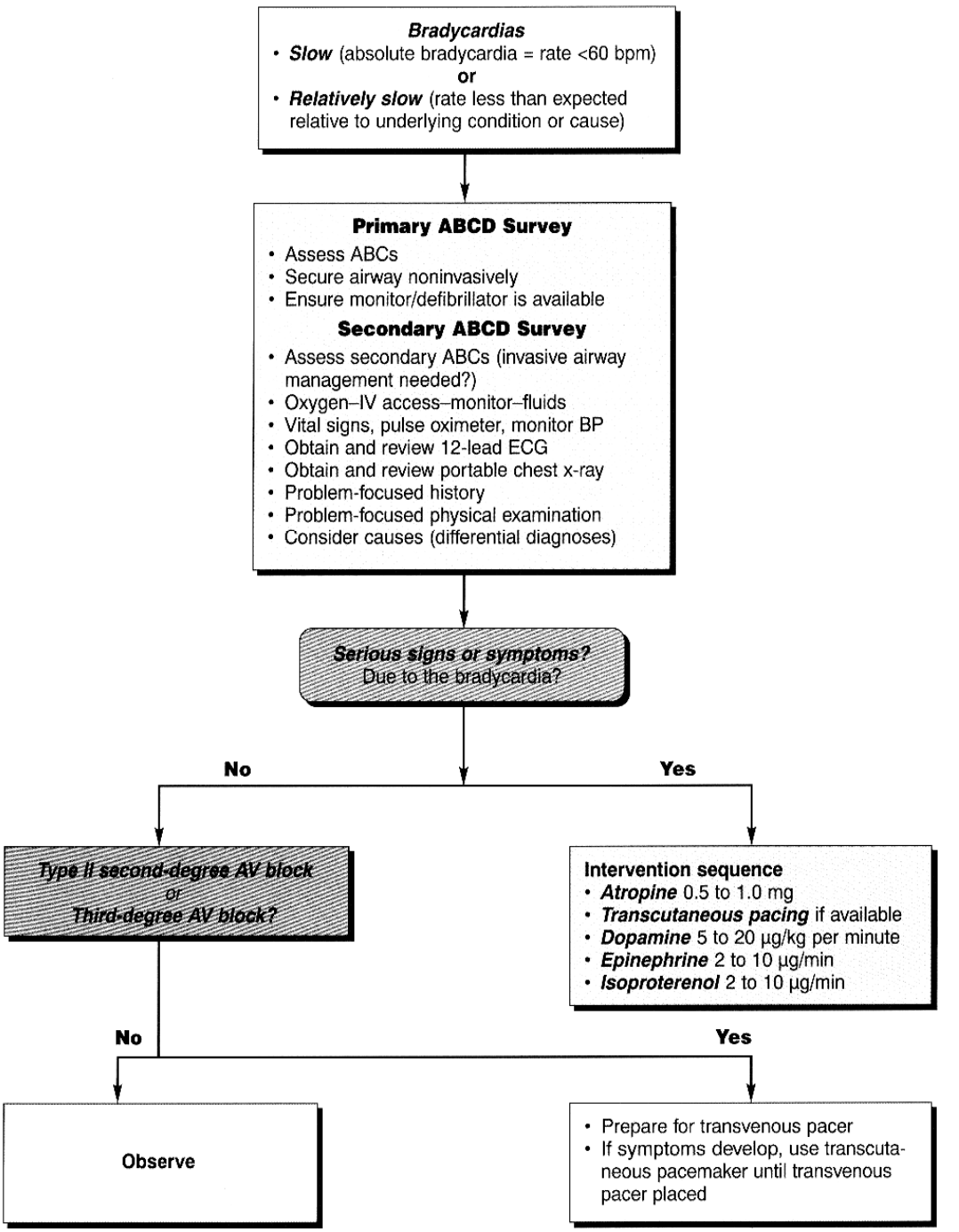

Asystole:
The Silent Heart Algorithm

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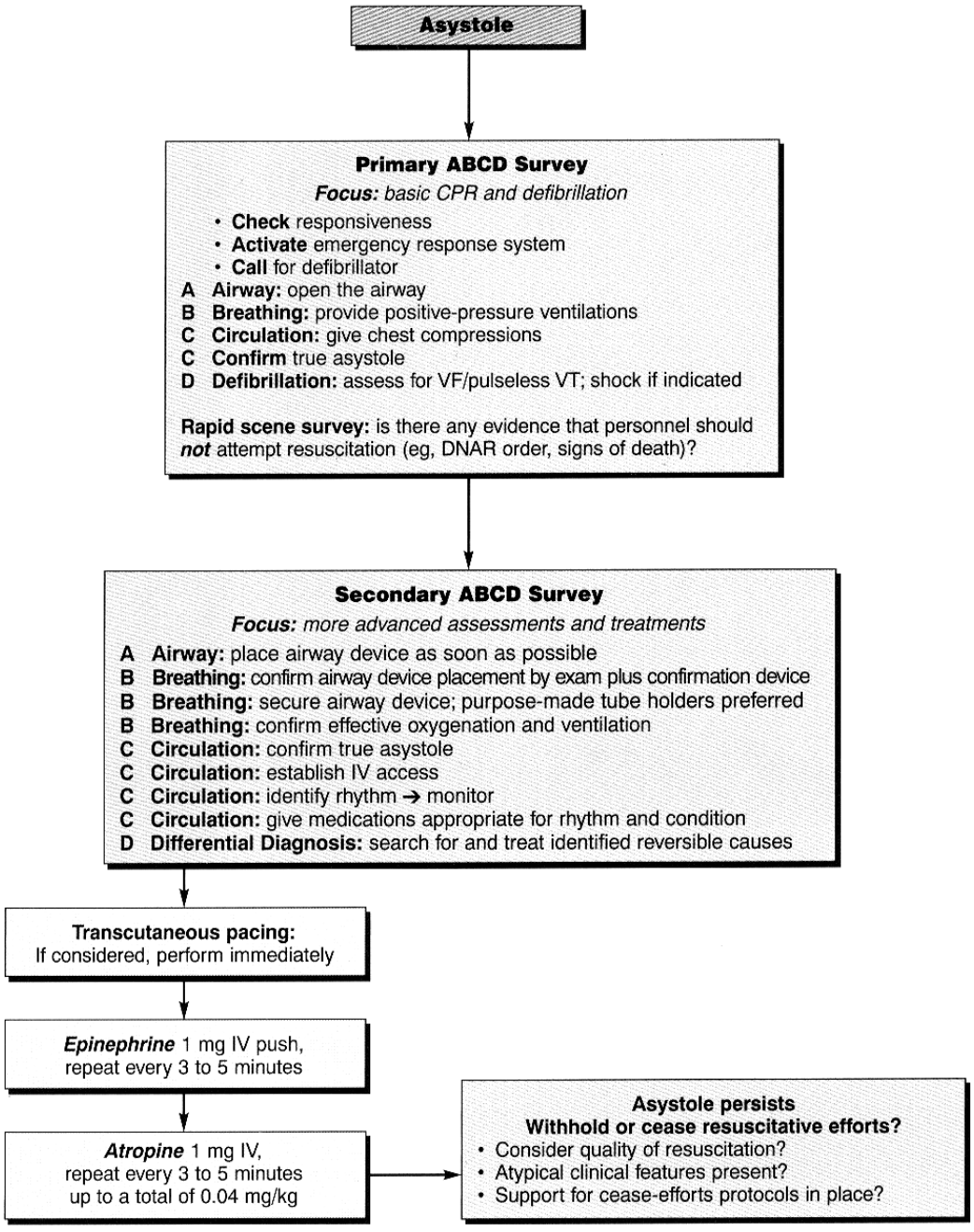

Pulseless Electrical Activity Algorithm

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